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WOOD PRESERVATIVE

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(57) Claim

1. A water-dilutable wood preservative containing

   a) from 5 to 65% by weight of a dimethylalkylamine,
   b) from 2.5 to 35% by weight of an aliphatic C_8-C_{14}-dicarboxylic acid and
   c) from 0.25 to 15% by weight of a triazole compound.

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(54) Title: WOOD PRESERVATIVE

(54) Bezeichnung: HOLZSCHUTZMITTEL

(57) Abstract

A wood preservative contains a dimethylalkylamine, an aliphatic C_8-C_{20} dicarboxylic acid and a triazole compound.

(57) Zusammenfassung

Die vorliegende Erfindung betrifft ein Holzschutzmittel, welches ein Dimethylalkylamin, eine aliphatische C_8-C_{20}-Dicarbonsäure und eine Triazolverbindung enthält.

Wood preservative

It is known that dimethylalkylamines, for example in the form of salts of long-chain monocarboxylic acids, can be used for application in oily, solvent-containing wood preservatives (EP 147 976). The same applies to mixtures of fenpropimorph and water-insoluble acids (EP-B-0 402 697).

It is also known that dimethylalkylamine, tridemorph, fenpropimorph or their mixture, an emulsifier and a water-insoluble acid can be used as water-soluble wood preservatives (EP-A-0 370 371).

It is also known that dimethylalkylamine, tridemorph, fenpropiomorph [sic], a water-insoluble acid and a water-soluble acid can be used as water-soluble concentrates in wood preservation (DE-A-3 736 298).

Mixtures based on dimethyl-coconut fatty amine, 2-ethylhexanoic acid, propiconazole and an emulsifier have also been described for use as wood preservatives.

However, these water-soluble wood preservatives have considerable disadvantages in application. They have a corrosive effect on iron and steel and dissolve, inter alia, rust and other iron compounds from the surfaces of the impregnation tank with formation of emulsifiable or water-soluble iron salts, so that application solutions acquire a strong brown discoloration in a short time. Consequently, the wood to be impregnated is in turn influenced in its color and is changed, resulting, for example, in a strong gray discoloration owing to reaction of the iron compounds with wood constituents. At the same time, the pH of the appliction solution increases; the result may be instability of the solutions, including phase separation.

It has now been found that the performance characteristics of the water-soluble wood preservatives are considerably improved if wood preservatives which contain a dimethylalkylamine, an aliphatic C_8-C_{14}-dicarboxylic acid and a triazole compound are used. In addition to the excellent performance characteristics, the wood preservatives have very good activity against wood-destroying Basidiomycetes.

The novel wood preservatives (concentrates) are water-miscible and, on dilution of the concentrates with water, form clear to slightly opaque solutions. Advantageously, the aqueous solutions (impregnating solutions) obtained after dilution of the

concentrates with water have a pH of from 4 to 8, preferably from 5 to 7. The aqueous impregnating solutions obtained are distinguished by the fact that the active components penetrate very effectively into the wood to be impregnated and thus result in effective wood preservation.

A dimethylalkylamine is an N,N-dimethyl-N-alkylamine whose alkyl radical contains, for example, 6 to 20 carbon atoms. Dimethylalkylamines having 12 or 14 carbon atoms in the alkyl radical are preferred. In addition to the pure dimethylalkylamines, mixtures, for example mixtures of dimethyl-C_{12}-alkylamine and dimethyl-C_{14}-alkylamine (dimethyl-(C_{12}/C_{14}-alkylamine) [sic], may also be used.

The novel wood preservatives contain C_8-C_{20}-dicarboxylic acid, preferably C_8-C_{14}-dicarboxylic acids. Suitable dicarboxylic acids are, for example, suberic acid, azelaic acid, sebacic acid, undecanedioic acid, dodecanedioic acid, brassylic acid and thapis [sic] acid. Sebacic acid is particularly advantageously used.

Examples of suitable triazoles are:
(Z)-2-(1,2,4-triazol-1-ylmethyl)-2-(4-fluorophenyl)-3-(2-chlorophenyl)oxirane (epoxiconazole),
2-(1-chlorocyclopropyl-1-(2-chlorophenyl)-3-(1,2,4-triazol-1-yl)-propan-2-ol [sic],
1-butyl-1-(2,4-dichlorophenyl)-2-(1,2,4-triazol-1-yl)ethanol (hexaconazole),
1-[2-chlorophenyl)methyl]-1-(1,1-dimethyl)-2-(1,2,4-triazol-1-yl-ethanol [sic],
1-(4-fluorophenyl)-1-(2-fluorophenyl)-2-(1,2,4-triazol-1-yl)-ethanol (flutriafol), (RS)-4-(4-chlorophenyl)-2-phenyl-2-(1H-1,2,4-triazol-1-yl-methyl)butyronitrile, 1-[(2 RS, 4 RS; 2 RS, 4 SR)-4-bromo-2-(2,4-dichlorophenyl)tetrahydrofurfuryl]-1H-1,2,4-triazole, 3-(2,4-dichlorophenyl)-2-(1H-1,2,4-triazol-1-yl)quinazolin-4(3H)-one, (RS)-2,2-dimethyl-3-(2-chlorobenzyl)-4-(1H-1,2,4-triazol-1-yl)butan-3-ol, bitertanol, triadimefon, triadimenol, cyproconazole, dichlobutrazol, difenoconazole, diniconazole, etaconazole, flusilazole, penconazole, tetraconazole, bromuconazole, metconazole, fenbendazol, fensilazol, 1-(2-(2,4,-dichlorophenyl)-1,3-dioxolan-2-ylmethyl)-1H-1,2,4-triazole [sic] (azaconazole), 1-(2-(2,4-dichlorophenyl)-4-propyl-1,3-dioxolan-2-yl-methy)-1H-1,2,4-triazole (propiconazole), α-tert-butyl-a-(p-chlorophenyl-ethyl)-H-1,2,4-triazole-1-ethanol [sic] (tebuconazole).

Propiconazole, penconazole, cyproconazole, hexaconazole and tebuconazole are particularly advantageously used.

Triazoles may be present not only in the form of the free base but also in the form of a metal salt complex or as an acid addition salt.

In order to improve the fungicidal activity, it may be advantageous if the novel wood preservative additionally contains morpholine derivatives, preferably the fungicidal active ingredients fenpropimorph (4-[3-(4-tert-butylphenyl)-2-methylpropyl]-cis-2,6-dimethylmorpholine), fenpropidin (N-[3(4-tert-butylphenyl)-2-methylpropyl]pipieridine [sic] or tridemorph (N-tridecyl-2,6-dimethylmorpholine) or salts thereof.

A synergistic improvement in activity is achieved as a result. Fenpropimorph is particularly advantageously used. Fenpropimorph, fenpropidin or tridemorph and the triazoles are preferably used in a weight ratio of from 0.5:1 to 10:1, preferably from 1:1 to 5:1, in particular from 2:1 to 3:1.

It may furthermore be advantageous if the novel wood preservative additionally contains a water-insoluble monocarboxylic acid or a salt thereof.

Suitable water-insoluble monocarboxylic acids are, for example, a straight-chain aliphatic monocarboxylic acid of 5 to 20 carbon atoms, such as hexanoic acid, heptanoic acid, octanoic acid, nonanoic acid or decanoic acid, or a branched aliphatic monocarboxylic acid, such as 2-ethylhexanoic acid, 2-ethylheptanoic acid, isooctanoic acid, isoheptanoic acid, isononanoic acid, versatic acid or neocarboxylic acid (more highly branched monocarboxylic acids). Other water-insoluble monocarboxylic acids, eg. sorbic acid, benzoic acid, or cyclohexanecarboxylic acid, may also be used. 2-Ethylhexanoic acid is particularly advantageously used.

The novel wood preservatives may additionally contain boron compounds, eg. boric acid, alkali metal borates or boric esters, as diffusable components. This additionally results in an improvement in the activity in the protection from blue rot and mold.

The novel wood preservatives (concentrates) contain in general

from 5 to 65, in particular from 25 to 55, % by weight of dimethylalkylamine, in particular dimethyl-(C_{12}/C_{14})alkylamine,

from 0 to 35, in particular from 5 to 20, % by weight of morpholine derivatives, in particular fenpropimorph,
from 0.25 to 15, preferably from 1 to 10, in particular from 2.5 to 7.5, % by weight of triazole,
from 2.5 to 35, in particular from 10 to 25, % by weight of aliphatic C_8-C_{20}-dicarboxylic acids, in particular sebacic acid,
from 0 to 30, in particular from 2.5 to 12.5, % by weight of water-insoluble monocarboxylic acids,
from 0 to 30% by weight of water and
from 0 to 30% by weight of organic solvents,

the sum in each case being 100% by weight. Water and solvents serve here, inter alia, for better handling, for example adjustment of the viscosity, acceleration of the dissolution of the concentrates in water. Some of the solvents are simultaneously required for dissolving the triazoles.

The concentrates obtained may be present in liquid homogeneous form, as a paste or in solid form.

Preferably used organic solvents are water-soluble or water-miscible polar solvents, for example glycols (ethylene glycol, propylene glycol), glycol ethers (ethylene glycol monomethyl ether, ethylene glycol monoethyl ether, glycol ether acetates (butylglycol acetate), N-alkylpyrrolidones (N-methylpyrrolidone), alcohols, dimethylformamide, acethylformamide [sic] and dimethyl sulfoxide.

Hydroxycarboxylic acids, eg. tartaric acid or maleic acid, may be added to the concentrates or impregnating solutions in order to establish the pH, for example of about 6 or lower.

In order to increase the action spectrum or to achieve special effects, for example additional protection from insects including termites, the abovementioned formulations may be combined with further active ingredients, which, if required, are incorporated with suitable additional emulsifiers.

Suitable components of the mixture are, for example, the following compounds:

sulfenamides, such as dichlofluanid, tolylfluanid, folpet, fluorfolpet;
benzimidazoles, such as carbendazim, benomyl, fuberidazoles, thiabendazoles or salts thereof;
thiocyanates, such as thiocyanatomethylthiobenzothiazole, methylene bisthiocyanate,

quaternary ammonium compounds, such as benzyldimethyltetradecylammonium chloride, benzyldimethyldodecylammonium chloride or didecyldimethylammonium chloride;
quaternary phosphonium compounds;
iodine derivatives, such as diiodomethyl p-tolyl sulfone, 3-iodo-2-propinyl alcohol, 4-chlorophenyl-3-iodopropargylformal, 3-bromo-2,3-diiodo-2-propenyl ethyl carbonate, 2,3,3-triiodoallyl alcohol, 3-bromo-2,3-diiodo-2-propenyl alcohol, 3-iodo-2-propynyl-n-butyl carbamate, 3-iodo-2-propynyl-n-hexyl carbamate, 3-iodo-2-propinylcyclohexyl carbamate, 3-iodo-2-propynylphenyl carbamate, O-1-(6-iodo-3-oxohex-5-ynyl)-butyl carbamate [sic], O-1-(6-iodo-3-oxohex-5-ynyl)phenyl carbamate [sic], napcocide;
phenol derivatives, such as tribromophenol, tetrachlorophenol, tetrachlorophenol [sic], 3-methyl-4-chlorophenol, dichlorophen, o-phenylphenol, m-phenylphenol, p-phenylphenol, 2-benzyl-4-chlorophenol;
bromine derivatives, such as 2-bromo-2-nitro-1,3-propanediol, 2-bromo-2-bromomethylglutaronitrile;
isothiazolinones, such as N-methylisothiazolin-3-one, 5-chloro-N-methylisothiazolin-3-one, 4,5-dichloro-N-octyl-isothiazolin-3-one, N-octylisothiazolin-3-one;
benzisothiazolinones, such as 4,5-trimethylisothiazol-3-one;
pyridines, such as 1-hydroxy-2-pyridinethione (and their Na, Fe, Mn and Zn salts), tetrachloro-4-methylsulfonylpyridine;
metal soaps, such as tin, copper and zinc naphthenate, octoate, 2-ethylhexanoate, oleate, phosphate and benzoate.

Organotin compounds, for example tributyltin (TBT) compounds, dialkyldithiocarbamates, such as Na and Zn salts of dialkyldithiocarbamates, tetramethylthiuram disulfide;
nitriles, such as 2,4,5,6-tetrachloroisophthalodinitrile;
benzothiazoles, such as 2-mercaptobenzothiazole;
quinolines, such 8-hydroxyquinoline and Cu salts thereof;
tris-N-(cyclohexyldiazeniumdioxy)aluminum, N-(cyclohexyl-diazeniumdioxy)tributyltin or K salt,
bis-N-(cyclohexyldiazeniumdioxy)copper.

The following may be preferably added as insecticides:

phosphoric esters, such as azinphos-ethyl, azinphos-methyl, 1-(4-chlorophenyl)-4-(O-ethyl, S-propyl)phosphoryloxypyrazole [sic] chlorpyrifos, coumaphos, demeton, demeton-S-methyl, diazinon, dichlorvos, dimethoate, ethoprophos, etrimfos, fenitrothion, fenthion, heptenophos, parathion, parathion-methyl, phosalone, phoxim, pirimiphos-ethyl, pirimiphos-methyl, profenofos, prothiofos, sulfprofos, triazophos and trichloron;
carbamates, such as aldocarb, bendiocarb,

2-(1-methylpropyl)phenylmethyl carbamate, butocarboxim, butoxycarboxim, carbaryl, carbofuran, carbosulfan, cloethocarb, isoprocarb, methomyl, oxamyl, primicarb, promecarb, propoxur und thiocarb;

organosilicon compounds, preferably dimethyl(phenyl)silylmethyl 3-phenoxybenzyl ethers, such as dimethyl(4-ethoxyphenyl)silylmethyl 3-phenoxybenzyl ether, or (dimethylphenyl)silylmethyl 2-phenoxy-6-pyridylmethyl ethers, such as dimethyl(9-ethoxyphenyl)silylmethyl 2-phenoxy-6-pyridylmethyl ether, or [(phenyl)-3-(3-phenoxyphenyl)propyl] (dimethyl)silanes, eg. (4-ethoxyphenyl)-[3-(4-fluoro-3-phenoxyphenylpropyl]dimethylsilane [sic]; pyrethroids, such as allethrin, alphamethrin, bioresmethrin, byfenthrin, cycloprothin, cyfluthrin, decamethrin, cyhalothrin, cypermethrin, deltamethrin, α-cyano-3-phenyl-2-methylbenzyl 2,2-dimethyl-3-(2-chloro-2-trifluoromethylvinyl)cyclopropane carboxylate, fenpropathrin, fenfluthrin, fenvalerate, flucythrinate, flumethrin, fluvalinate, permethrin, resmethrin and tralomethrin;

nitroimines and nitromethylenes, such as 1-[(6-chloro-3-pyridyl)methyl]-4,5-dihydro-N-nitro-1H-imidazole-2-amine (midacloprid), N-[(6-chloro-3-pyridyl)-methyl-]N'-cyano-N'-methylacetamide [sic].

Depending on the danger to the wood, application for preservation of the wood may be effected, for example:

a) by spraying the wood with the impregnating solution,
b) by immersing the wood in the impregnating solution (from dipping to impregnation by the open tank process),
c) by impregnating the wood with the aid of pressure differences, for example pressure impregnation or double vacuum impregnation,
d) by painting the wood or flooding.

In the case of secondary wood products, for example wood cuts, pulps and other industrial products or cellulose-containing materials which are susceptible to fungal attack, for example intermediates in papermaking, woody annual plants (bargasse [sic], rape), the application should be adapted to the technical possibilities.

The activity of the compositions in the area of wood preservation covers, for example:

a) molds (eg. Aspergillus niger)
b) soft rot fungi (eg. Chaetomium globosum)
c) blue stain fungi (eg. Pullularia pullulans)

d) wood-destroying Basidiomycetes (eg. Serpula lacrymans, Coniophora puteana).

The application concentration and application rate depend on the degree of danger to the wood, on secondary wood products or the cellulose-containing materials and also on the method of application. Thus, the application concentration of the concentrate in the impregnating solution is in general from 0.1 to 50, preferably from 0.2 to 20, % by weight, and the application rate is, for example, from 0.2 to 40, preferably from 0.5 to 20, kg/m^3. In the case of secondary wood products and cellulose-containing materials, the undiluted concentrate is generally used (eg. plywood, particle boards, bagasse boards).

The examples which follow illustrate the invention.

Experimental setup for corrosion tests

Small dip tanks of structural steel (ST 37) are produced and are sandblasted on the inside, said tanks having the following dimensions: height 11 cm, side length 8 cm each (2 mm thick steel sheets). Surface rust formation is achieved by exposure to rain or by artificial sprinkling with water.

After rinsing out with tap water and drying, these tanks are filled with the application solution (500 ml), the discoloration and the appearance of the solution and of the tank are checked after 7 days, the change in pH is measured and in addition the content of dissolved or emulsified iron is determined analytically after coarser constituents have been filtered off.

The results obtained here were confirmed in practical experiments in dip tanks (eg. 15,000 - 20,000 l of the impregnating solutions).

Examples not according to the invention (all % data are % by weight).

Example A

Dimethyl-(C_{12}/C_{14})-alkylamine	30 %
Fenpropimorph	20 %
Polyoxyethylene(5)coconut-amine	25 %
2-Ethylhexanoic acid	25 %

Corrosion test: 7 days
Application concentration: 3.5 % in water

pH (20°C) before the test	pH (20°C) after the test
6.65	7.25

ΔpH = +0.6

Appearance of the solution after the test: clear, dark brown
Iron content after the test: 155 mg/l

Example B

Dimethyl-(C_{12}/C_{14})-alkylamine	42.5 %
Propiconazole	7.5 %
Polyoxyethylene(5)coconut-amine	20 %
2-Ethylhexanoic acid	30 %

Corrosion test: 7 days
Application concentration: 3.5 % in water

pH (20°C) before the test	pH (20°C) after the test
6.90	7.50

ΔpH = +0.6

Appearance of the solution after the test: clear, dark brown
Iron content after the test: 400 mg/l

Example C

Dimethyl-(C_{12}/C_{14})-alkylamine	50 %
Isooctanoic acid	10 %
Lactic acid 80 % (commercial)	20 %
Propylene glycol	15 %
Water	5 %

Corrosion test: 7 days
Application concentration: 3.5 % in water

pH (20°C) before the test	pH (20°C) after the test
5.55	6.95

ΔpH = +1.40

Appearance of the solution after the test: milky, turbid, brown
Iron content after the test: 570 mg/l

Example D

Dimethyl-(C_{12}/C_{14})-alkylamine	50 %
2-Ethylhexanoic acid	24 %
Propionic acid	3 %
Propylene glycol	10 %
Water	13 %

Corrosion test: 7 days
Application concentration: 3.5 % in water

pH (20°C) before the test	pH (20°C) after the test
6.60	7.25

ΔpH = +0.65

Appearance of the solution after the test: turbid, strong brown color
Iron content after the test: 210 mg/l

Example E

Dimethyl-(C_{12}/C_{14})-alkylamine	50 %
2-Ethylhexanoic acid	24 %
Methoxyacetic acid	4.5 %
Propiconazole	3.0 %
Propylene glycol	10 %
Water	8.5 %

Corrosion test: 7 days
Application concentration: 3.5 % in water

pH (20°C) before the test	pH (20°C) after the test
6.51	7.12

ΔpH = +0.61

Appearance of the solution after the test: turbid, brown
Iron content after the test: 195 mg/l

Example F

Dimethyl-(C_{12}/C_{14})-alkylamine	50 %
2-Ethylhexanoic acid	22.5 %
Lactic acid (commercial)	7.5 %
Propylene glycol	10 %
Water	10 %

Corrosion test: 7 days
Application concentration: 3.5 % in water

pH (20°C) before the test	pH (20°C) after the test
6.43	7.13

ΔpH = +0.7

Appearance of the solution after the test: turbid, brown
Iron content after the test: 255 mg/l

Examples according to the invention (all % data are % by weight)

Example 1

Dimethyl-(C_{12}/C_{14})-alkylamine	50 %
2-Ethylhexanoic acid	5.0 %
Sebacic acid	20 %
Propiconazole	10 %
Propylene glycol	10 %
Water	5.0 %

Corrosion test: 7 days
Application concentration: 3.5 % in water

pH (20°C) before the test	pH (20°C) after the test
6.55	6.80

ΔpH = +0.25

Appearance of the solution after the test: clear, colorless
Iron content after the test: 1.8 mg/l

Example 2

Dimethyl-(C_{12}/C_{14})-alkylamine	40 %
2-Ethylhexanoic acid	5.0 %
Sebacic acid	16 %
Fenpropimorph	10 %
Propiconazole	3.33 %
Propylene glycol	10 %
Water	15.67 %

Corrosion test: 7 days
Application concentration: 3.5 % in water

pH (20°C) before the test 6.45 pH (20°C) after the test 6.69

ΔpH = +0.24

Appearance of the solution after the test: clear, slightly yellowish

Iron content after the test: 2.5 mg/l

Examples 3 to 9

Dimethyl-(C_{12}/C_{14})-alkylamine	45 %
2-Ethylhexanoic acid	5.0 %
Sebacic acid	20 %
Triazole	5.0 %
Propylene glycol	10 %
Water	15 %

Corrosion test: 7 days

Application concentration: 3.5 % in water

Ex.	Triazole	pH			Appearance of the solution	Fe content [mg/l]
		before	after	ΔpH		
3	Penconazole	6.20	6.33	0.13	clear, colorless	1.6
4	Tebuconazole	6.19	6.35	0.16	clear, colorless	2.3
5	Cyproconazole	6.18	6.35	0.17	clear, colorless	2.1
6	Bromoconazole	6.18	6.36	0.18	clear, slightly yellowish	4.1
7	Systanes	6.18	6.36	0.18	clear, colorless	2.0
8	Difenconazole	6.19	6.36	0.17	clear, colorless	2.4
9	Flusilazol	6.17	6.34	0.17	clear, colorless	1.8

Examples 10 to 17

Dimethyl-(C_{12}/C_{14})-alkylamine	40 %
Fenpropimorph	10 %
2-Ethylhexanic acid	5.0 %
Sebacic acid	18 %
Triazole	5.0 %
Propylene glycol	10 %

Water 12 %

Corrosion test: 7 days
Application concentration 3.5 % in water

Ex.	Triazole	pH before	pH after	pH ΔpH	Appearance of the solution	Fe content [mg/l]
10	Penconazole	6.17	6.28	0.11	clear, very slightly yellowish	3.6
11	Tebuconazole	6.13	6.28	0.15	clear, very slighty yellowish	2.0
12	Cyproconazole	6.14	6.27	0.13	clear, very slightly yellowish	2.0
13	Bromoconazole	6.13	6.30	0.17	clear, slightly yellowish	2.9
14	Systanes	6.20	6.29	0.09	clear, very slightly yellowish	4.0
15	Difenconazole	6.18	6.31	0.13	clear, colorless	3.2
16	Flusilazol	6.15	6.30	0.15	clear, very slightly yellowish	4.7
17	Propiconazole	6.17	6.30	0.13	clear, very slightly yellowish	3.1

We claim:

1. A water-dilutable wood preservative containing

   a) from 5 to 65% by weight of a dimethylalkylamine,
   b) from 2.5 to 35% by weight of an aliphatic C_8-C_{14}-dicarboxylic acid and
   c) from 0.25 to 15% by weight of a triazole compound.

2. A wood preservative as claimed in claim 1, which contains sebacic acid as the aliphatic C_8-C_{20}-dicarboxylic acid.

3. A wood preservative as claimed in claim 1, which contains a dimethylalkylamine having 6 to 16 carbon atoms in the alkyl radical.

4. A wood preservative as claimed in claim 1, which contains a dimethylalkylamine having 12 and/or 14 carbon atoms in the alkyl radical.

5. A wood preservative as claimed in claim 1, which contains propiconazole, penconazole, cyproconazole, hexaconazole or tebuconazole as the triazole compound.

6. A wood preservative as claimed in any of claims 1 to 5, which additionally contains a water-insoluble monocarboxylic acid or its salt.

7. A wood preservative as claimed in claim 6, which contains 2-ethylhexanoic acid as the water-insoluble monocarboxylic acid.

8. A wood preservative as claimed in any of claims 1 to 7, which additionally contains fenpropimorph, fenpropidin, tridemorph or a mixture thereof.

9. A wood preservative as claimed in claim 8, which additionally contains fenpropimorph.

10. A process for preserving wood, wherein the wood is treated with a wood preservative as claimed in any of claims 1 to 9.

11. An impregnating solution for impregnating wood for preservation from fungi, containing a wood preservative as claimed in any of claims 1 to 9 and additionally water.

12. A process for impregnating wood, wherein a wood preservative as claimed in any of claims 1 to 9 is diluted with water and the wood is impregnated with the aqueous impregnating solution obtained.

Wood preservative

Abstract

A wood preservative which contains a dimethylalkylamine, an aliphatic C_8-C_{20}-dicarboxylic acid and a triazole compound.

INTERNATIONAL SEARCH REPORT

International Application No
PC., EP 95/04434

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 B27K3/50

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 B27K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP,A,0 402 697 (WOLMAN GMBH DR) 19 December 1990 cited in the application see column 1, line 28-49 see column 3, line 24-27 ---	1-12
A	EP,A,0 482 433 (WOLMAN GMBH DR) 29 April 1992 ---	
A	EP,A,0 466 206 (WOLMAN GMBH DR) 15 January 1992 --- -/--	

[X] Further documents are listed in the continuation of box C.

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Date of the actual completion of the international search	Date of mailing of the international search report
14 February 1996	5.03.96

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+ 31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+ 31-70) 340-3016	Dalkafouki, A

INTERNATIONAL SEARCH REPORT

Interr nal Application No
PC1/EP 95/04434

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DATABASE WPI Section Ch, Week 9604 Derwent Publications Ltd., London, GB; Class A97, AN 96-035788 & JP,A,07 304 609 (XYENCE KK) , 21 November 1995 see abstract -----	1

INTERNATIONAL SEARCH REPORT

Information on patent family members

Intern[illegible]nal Application No
PC[illegible], EP 95/04434

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
EP-A-0402697	19-12-90	DE-A-	3918978	13-12-90
		DE-D-	59004583	24-03-94
		ES-T-	2062180	16-12-94
EP-A-0482433	29-04-92	DE-A-	4033419	23-04-92
		AT-T-	117618	15-02-95
		AU-B-	638873	08-07-93
		AU-B-	8596491	30-04-92
		DE-D-	59104396	09-03-95
		ES-T-	2067827	01-04-95
		JP-A-	4339602	26-11-92
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		ES-T-	2067109	16-03-95
		NO-B-	176088	24-10-94
		US-A-	5179116	12-01-93

INTERNATIONALER RECHERCHENBERICHT

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A. KLASSIFIZIERUNG DES ANMELDUNGSGEGENSTANDES
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Während der internationalen Recherche konsultierte elektronische Datenbank (Name der Datenbank und evtl. verwendete Suchbegriffe)

C. ALS WESENTLICH ANGESEHENE UNTERLAGEN

Kategorie*	Bezeichnung der Veröffentlichung, soweit erforderlich unter Angabe der in Betracht kommenden Teile	Betr. Anspruch Nr.
X	EP,A,0 402 697 (WOLMAN GMBH DR) 19.Dezember 1990 in der Anmeldung erwähnt siehe Spalte 1, Zeile 28-49 siehe Spalte 3, Zeile 24-27 ---	1-12
A	EP,A,0 482 433 (WOLMAN GMBH DR) 29.April 1992 ---	
A	EP,A,0 466 206 (WOLMAN GMBH DR) 15.Januar 1992 ---	
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[X] Weitere Veröffentlichungen sind der Fortsetzung von Feld C zu entnehmen

[X] Siehe Anhang Patentfamilie

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14.Februar 1996	5.03.96

Name und Postanschrift der Internationale Recherchenbehörde	Bevollmächtigter Bediensteter
Europäisches Patentamt, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+ 31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+ 31-70) 340-3016	Dalkafouki, A

INTERNATIONALER RECHERCHENBERICHT

Internationales Aktenzeichen
PC., EP 95/04434

C.(Fortsetzung) ALS WESENTLICH ANGESEHENE UNTERLAGEN

Kategorie*	Bezeichnung der Veröffentlichung, soweit erforderlich unter Angabe der in Betracht kommenden Teile	Betr. Anspruch Nr.
A	DATABASE WPI Section Ch, Week 9604 Derwent Publications Ltd., London, GB; Class A97, AN 96-035788 & JP,A,07 304 609 (XYENCE KK) , 21.November 1995 siehe Zusammenfassung -----	1

INTERNATIONALER RECHERCHENBERICHT

Angaben zu Veröffentlich ..., die zur selben Patentfamilie gehören

Internationales Aktenzeichen
PC., EP 95/04434

Im Recherchenbericht angeführtes Patentdokument	Datum der Veröffentlichung	Mitglied(er) der Patentfamilie		Datum der Veröffentlichung
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		ES-T-	2062180	16-12-94
EP-A-0482433	29-04-92	DE-A-	4033419	23-04-92
		AT-T-	117618	15-02-95
		AU-B-	638873	08-07-93
		AU-B-	8596491	30-04-92
		DE-D-	59104396	09-03-95
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		JP-A-	4339602	26-11-92
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		NO-B-	176088	24-10-94
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